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Any teacher of biological chemistry in a medical school knows how flimsy a chemical structure has been erected in the minds of the students coming to him, and that the information acquired is about as useful as is a cobweb for catching fish.

The causes of this are self-evident. Probably the most satisfying reason lies in the newness of the possibilities of the application of the science of chemistry to diagnosis and treatment. The collegiate instructor has failed to appreciate the progressive utilization of chemistry by the biological sciences. There is a chasm between what the instructor knows and attempts to teach to the pre-medical student and what the pre-medical student needs. And as a result the student falls into the chasm, and is lost. It is the job of the collegiate instructor to bridge the gap through constructive cooperation. The medical-school instructor has not been sufficiently insistent on preliminary requirements from a qualitative standpoint, nor has he shown any special inclination to relate the needs of the situation. These facts when coupled with the disinclination of the college teacher of chemistry to break away from the classical and now obsolete methods of teaching and inaugurate a system adapted to the demands of the times give some explanation of what at present confronts us. There is at hand a supply of potential useful information that lacks efficient assimilation because of the lack of understanding of fundamental principles.

The remedies are obvious—an attempt by the collegiate instructor in chemistry to learn something of what chemistry is doing in biology, a measure of cooperation between teachers of biological chemistry and the pre-medical instructors, a willingness on the part of the latter to recognize the validity of the wishes of the former, an outline of preparedness from the qualitative point of view, and a realization that true preparedness rests on understanding, while understanding can only come when detail is subordinated to principle.

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### SCIENTIFIC EVENTS

#### BRITISH EXPERIMENTAL STATION FOR FUEL RESEARCH

THE Fuel Research Board of the Department of Scientific and Industrial Research has issued a report, signed by Sir George Beilby, the director of fuel research, describing the scheme of research they have adopted and their plan for the establishment of a fuel research station on an industrial scale.

It is stated in the London *Times* that in a previous report, which has not been published, they stated that they had in view two main lines of research: (1) A survey and classification of the coal seams in the various mining districts by means of chemical and physical tests in the laboratory, and (2) an investigation of the practical problems which must be solved if any large proportion of the raw coal at present burned in its natural state is to be replaced by the various forms of fuel obtainable from coal by processes of carbonization and gasification.

At one time it was thought that the former line of inquiry could be proceeded with in advance of the second, but further consideration has shown them to be so interdependent that they can be most satisfactorily dealt with side by side. However, in preparation for the organization of the first line of inquiry, an experimental study of standard methods for the examination of coal in the laboratory has been made, and as the result of work carried out for the board in the Fuel Laboratory of the Imperial College of Science a test has been elaborated which, by direct weighing and measurement, gives the yields of gas, oil, water and carbonaceous residue that result from carbonization at any definite temperature.

Among the problems to be investigated are:

1. Can the 35 to 40 million tons of raw coal used every year for domestic heating be replaced wholly or partially by smokeless fuel, solid or gaseous, prepared by the carbonization of this coal?
2. Can adequate supplies of fuel for the Navy be obtained by carbonizing the coal at present used in its raw form for industrial and domestic purposes?
3. Can supplies of town gas be obtained more economically and conveniently by methods of car-

bonization and gasification other than those now used in gas works?

4. Can electric power be obtained more cheaply if the coal used for steam raising is first subjected to processes of carbonization and gasification?

5. Will the more scientific development of the preparation and use of fuel, which would be implied in the successful working out of the foregoing questions, enable the peat deposits of the United Kingdom to take a serious place as economic sources of fuel for industrial purposes?

6. Can the use of gaseous fuel in industrial operations be forwarded by the development of more scientific methods of combustion in the furnaces, muffles and ovens used in metallurgical, ceramic and chemical operations?

Answers to these questions, the report points out, will be obtained only by coordinated research carried on the lines of a broad and well-considered scheme, but at the same time the Fuel Research Board think it is to be expected that solutions of some of the problems will be supplied by workers in the industries, and they would regard it as a great misfortune were the establishment of a government organization for fuel research to result in discouraging or in any way limiting the activities of outside workers or organizations.

It was realized that the conditions required for the research station could be fulfilled only by a site in the neighborhood of a large gas works. Some months ago the director of Fuel Research approached Dr. Charles Carpenter, the chairman of the South Metropolitan Gas Company, and subsequently Dr. Carpenter on behalf of the directors of his company, made the following very generous offer:

1. To lease the government at a peppercorn rent sufficient land at the East Greenwich gasworks for the erection of the research station.

2. To prepare drawings and specifications for the station on lines laid down by the board and to make contracts for its erection; and

3. To give every facility for the transport of coal and other supplies to the station and to take over at market prices the surplus products, gas, tar, liquor and coke, resulting from the operations of the station.

The site consists of a strip of level ground, about 250 feet wide by 700 feet to 800 feet long,

situated on the main siding which connects the gas works with the South-Eastern Railways and possessing access to an existing road. The station, as planned, will be capable of any extensions required for future researches. Of the four acres to be leased, only one acre will be occupied by buildings under the present scheme. Further, a large part of the equipment of the buildings will be of a permanent character and will serve all the general purposes of a research station. Future extensions, therefore, will not repeat this permanent equipment, but will be based upon it.

#### THE COLUMBIAN INSTITUTE

THE great scientific bureaus of the government at Washington with their thousands of employees dealing with the country's problems in every branch of science, and the important learned societies and scientific establishments of the national capital, were influenced in their early growth and development in a greater or less degree by a scientific society which flourished in Washington during the early years of the last century. The Columbian Institute for the Promotion of Arts and Sciences, now all but forgotten, was the first learned society established in Washington, its organization dating from June, 1816, sixteen years after the occupation of the city as the federal capital, and less than two years after the invasion by the British troops. The population of Washington was at that time little more than 10,000, and the repair and reconstruction of the public buildings was still in the initial stage. The history, organization and achievements of this society are fully described in an interesting Bulletin of the United States National Museum by Mr. Richard Rathbun, assistant secretary of the Smithsonian Institution, in charge of the National Museum.

The objects of the Columbian Institute, which was chartered by Congress in 1818 for a term of twenty years, were as a whole very diversified, those specifically named in the beginning having been almost wholly of a utilitarian nature, such as the government has from time to time assumed and made the basis of the work of several scientific bureaus.